



Value Package Design Guide and Manual

***Don't miss a single sound.***





Dear Valued Customer,

Thank you for choosing Listen! All of us at Listen are dedicated to providing you with the highest quality products available. We take great pride in their outstanding performance because we care that you are completely satisfied. That's why we independently certify them to the highest quality standards and back them with a limited lifetime guarantee. We stand ready to answer any questions you might have during installation or in the operation of our products. Should you experience any problems whatsoever with your Listen products, we are ready to help you in any way we can with prompt, efficient customer care. Because at Listen, it's all about you! And should you have any comments on how we might improve our products or our service, we're here to listen.

Here's how to reach us:

+1.801.233.8992

+1.800.330.0891 North America

+1.801.233.8995 fax

support@listentech.com

www.listentech.com

Thank you and enjoy your listening experience!

Best regards,

Russell Gentner and the Listen Team

- In the few instances where repairs were needed, 99% of all clients indicated that they were happy with repair turn-around-times and 85% of the time, clients were without their product for less than 10 days!
- Overall client satisfaction of working with Listen was rated 4.8 out of 5.
- "Please continue with your excellent attitude toward customer satisfaction. You guys are great!"
- "I've never had such good service from any company. Keep up the good work!"
- "You stand behind your product wonderfully."



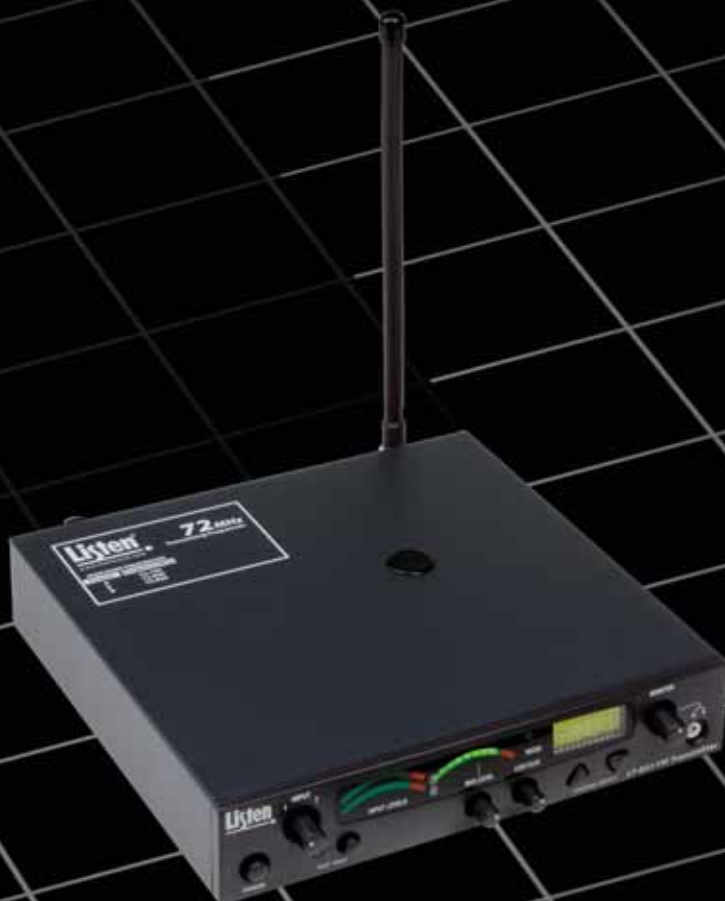
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# Value Package

## Design Guide



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## Value Package Contents

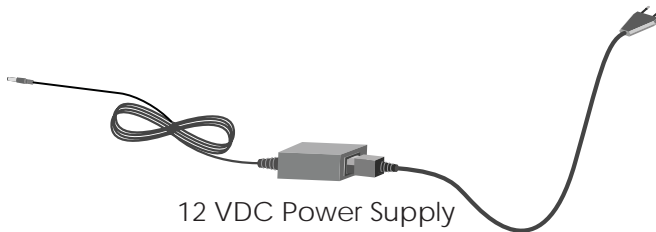
- (1) LT-803-072 Stationary 3-Channel FM Transmitter
- (4) LR-200-072 Standard 3-Channel FM Receiver
- (1) LA-123 90° Helical Antenna
- (4) LA-161 Single Ear Bud
- (1) LA-304 Assitive Listening Notification Signage Kit
- (1) LA-207 12 VDC Power Supply
- (1) Installation Guide



LT-803-072 Stationary 3-Channel FM Transmitter



LA-161 Single Ear Bud



12 VDC Power Supply



LA-123 90° Helical Antenna

LR-200-072 Standard 3-Channel FM Receiver



Installation Guide

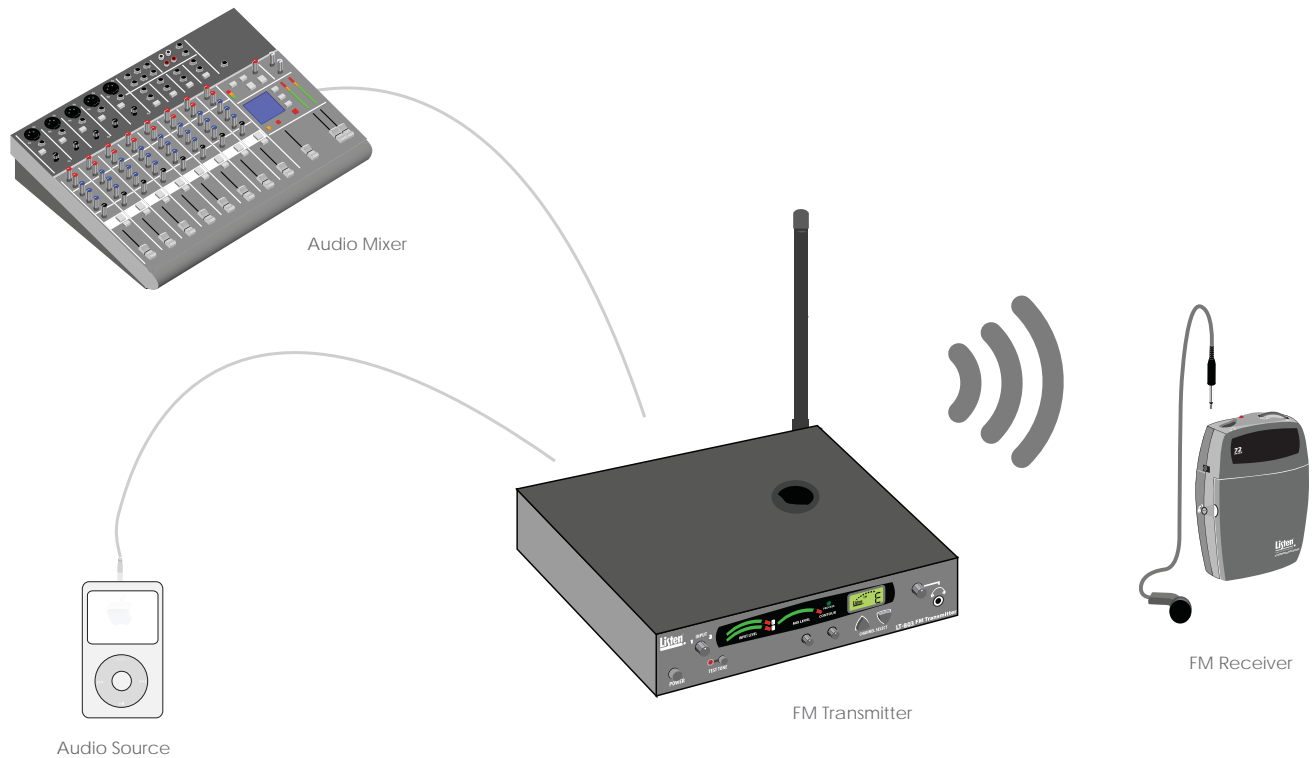


LA-304 Assitive Listening Notification Signage Kit



# Frequency Modulation (FM) Technology Overview

Frequency modulation or (FM) is a means of transmitting audio using electromagnetic waves. This same technology is used by local FM radio stations to broadcast music. FM signals can travel through most barriers – walls, floors, and ceilings. The distance a signal travels has many different variables such as Radio Frequency (RF) output power, the type and placement of the antenna, and the broadcasted frequency. Unlike infrared, FM transmission are not secure. This enables a receiver to travel further distances from the source. This section of the manual will help you design a system that will get the best range and least amount of interference.



# System Overview

There are four main components to the Value Package – the transmitter, antenna, receiver and input source.

## Input Source

The input source can be audio from a sound board, microphone or a personal audio source like a CD player, MP3 player, computer, DVD, etc. Audio will be connected into the audio inputs of the Stationary Transmitter.



## Transmitter

The LT-803-072 transmitter modulates the audio on an FM carrier and transmits the signal via an antenna.



LT-803-072 Stationary 3-Channel FM Transmitter (72 MHz)

## Antenna

The LP-3CV-072 includes the LA-123 90° Helical Antenna. This antenna has a BNC connector and should be mounted on the back of the LT-803-072. For further antenna options see page 11.



LA-123 90° Helical Antenna

## Receivers

The LR-200-072 receiver captures the signal sent from the transmitter and outputs it into the LA-161 Single ear bud. Listen offers a variety of receivers.

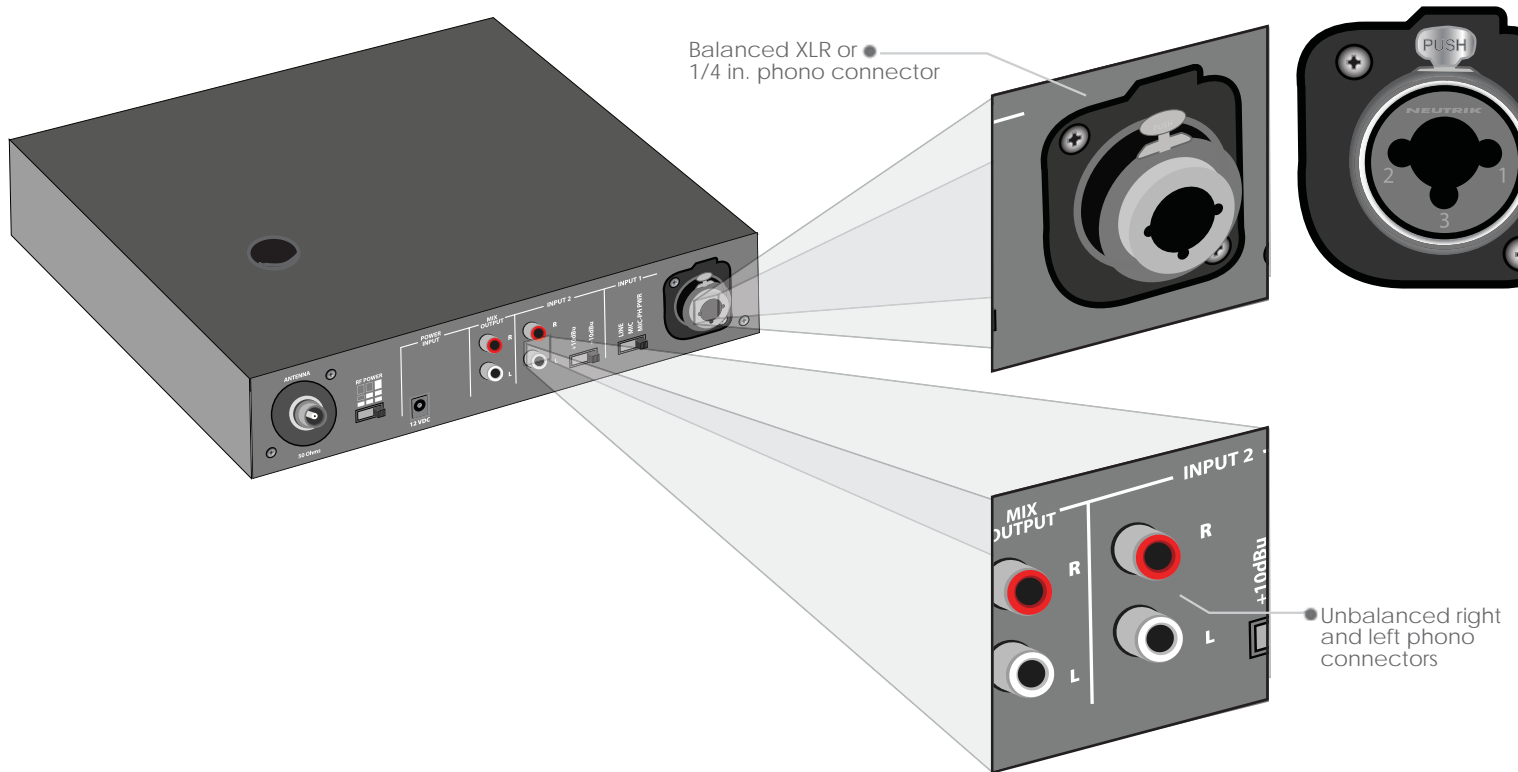


LR-200-072 Standard 3-Channel FM Receiver (72 MHz)

# Key Concepts in Value Package Setup

## Input Selection

The LT-803-072 has two audio input options: Input 1 and Input 2. Input 1 is a balanced connection using either an XLR or ¼ in. phono connector, and input 2 is two unbalanced phono connectors. Use Input 1 if you are using a microphone or if you have a balanced connection such as a professional audio mixer (you can also use Input 1 for unbalanced connections). Use Input 2 to connect to an unbalanced audio source.



### Input 1: Connecting the audio source

Input 1 offers a choice of balanced XLR or ¼ in. phono connector. Plug an audio source into Input 1: move the input select switch to the type of input source being used. Select "Line" for Line Inputs, "Mic" for dynamic microphones or "Mic + PH Power" for condenser microphones. A balanced feed from a soundboard can also be used with Input 1.

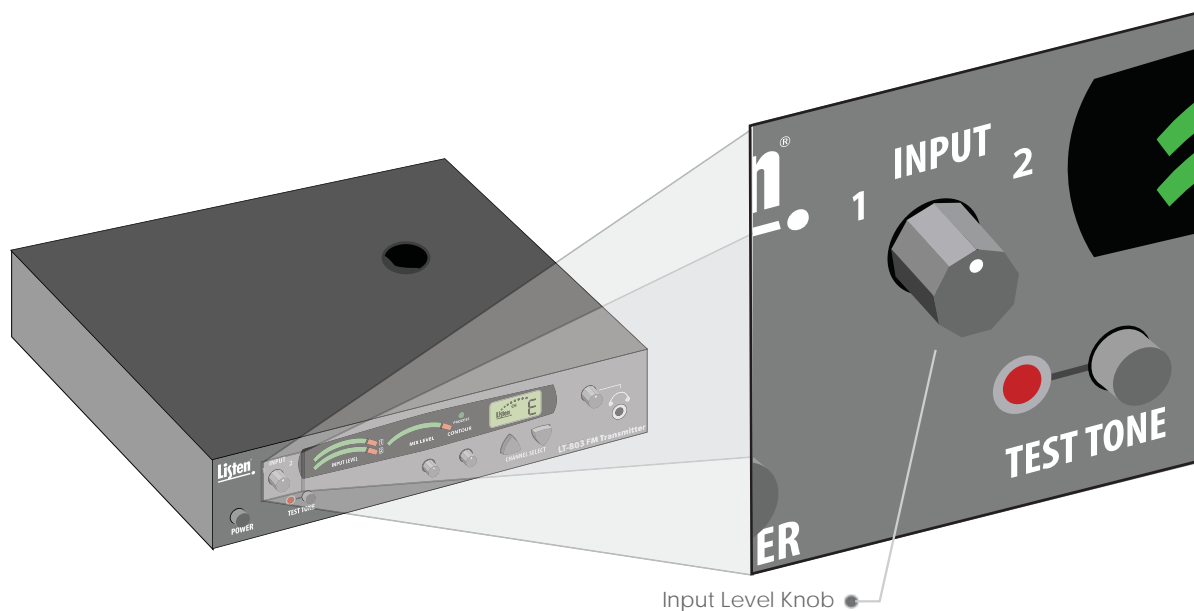
### Input 2: Connect the audio source

Plug your unbalanced audio source into Input 2 and select the audio level switch for -10 dBu or +10 dBu to match the audio level coming from your equipment.

## Key Concepts in Value Package Setup

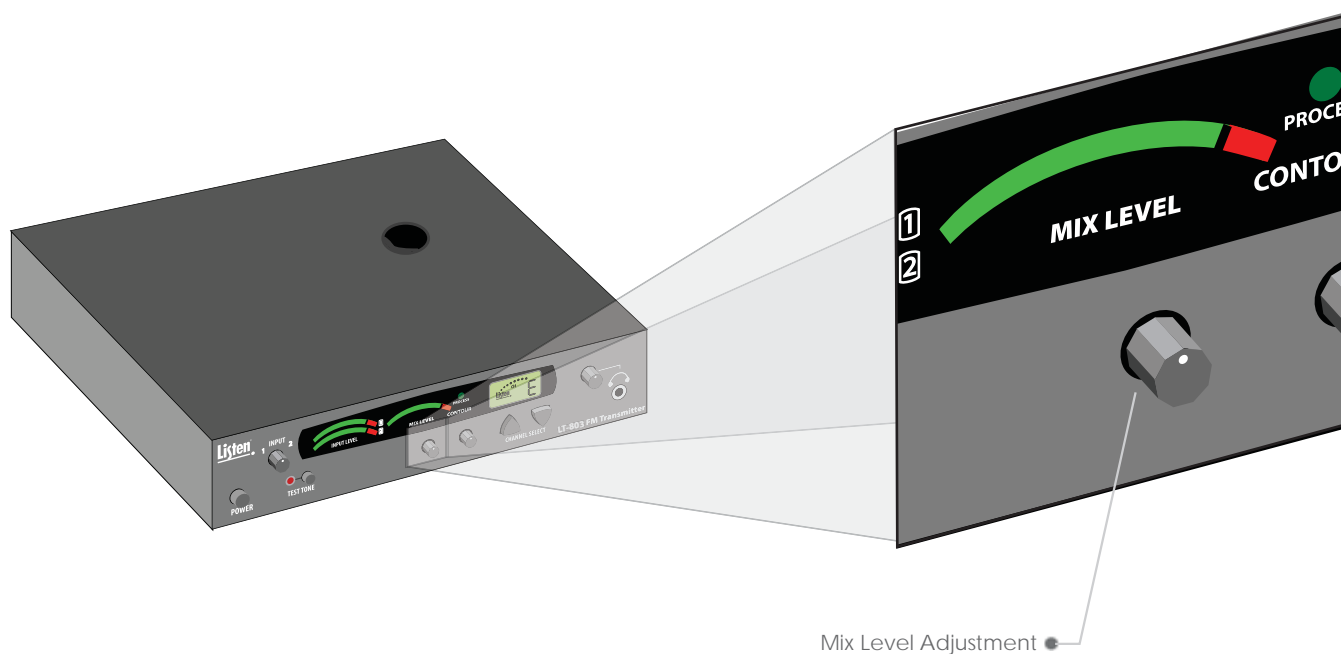
### Using Multiple inputs

The LT-803-072 can accommodate multiple inputs simultaneously with the use of the input level potentiometer. When multiple inputs are present, both input level lights will be activated.



### Mix Level

The mix level acts as the “master transmit” control. It will increase the transmit gain on the “mix” of the two levels (if two levels are in use).



# Key Concepts in Value Package Setup

## Selecting Transmitting Frequencies

Use this section of the guide to choose the channel settings for the transmitter and receivers.

### Find transmission channel(s)

The goal is to find a transmission channel(s) that is free from interference. Interference comes from transmitters and other outside FM signals.

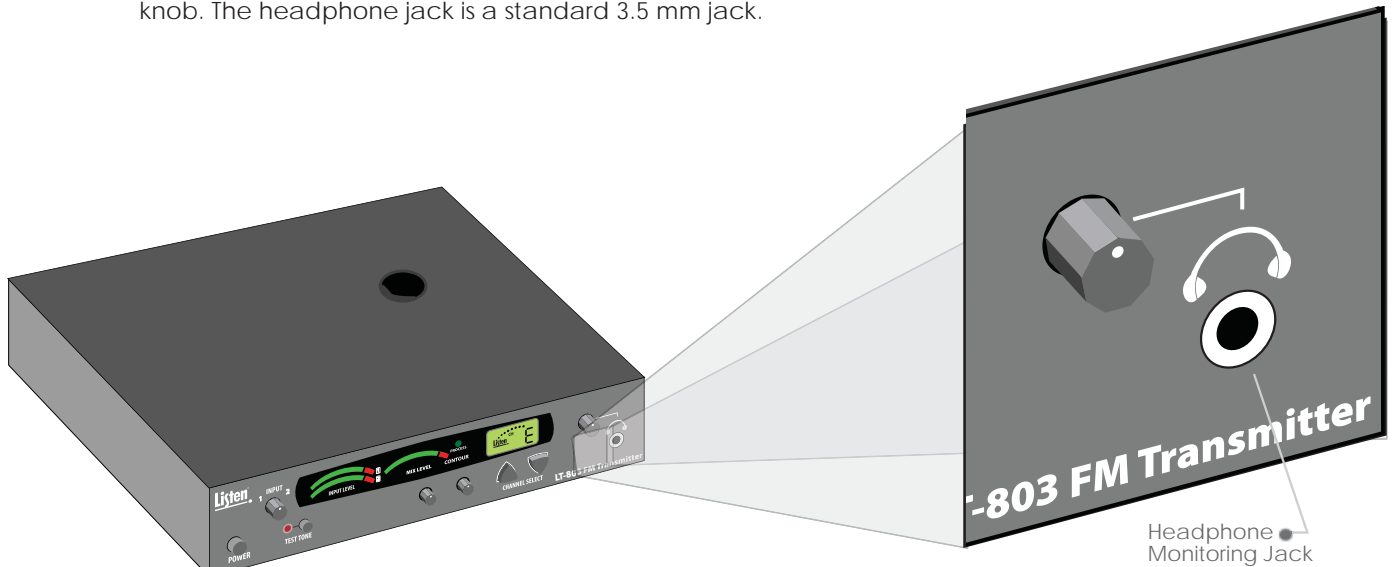
### Listen's LT-803-072 offers 3 different channels to choose from

With 3 different channels to choose from, the chance of finding an interference free channel is increased. The best way to check for interference is to turn the LR-200-072 on and listen to each channel. Transmit on the channel that has the least amount of noise.

## Testing System

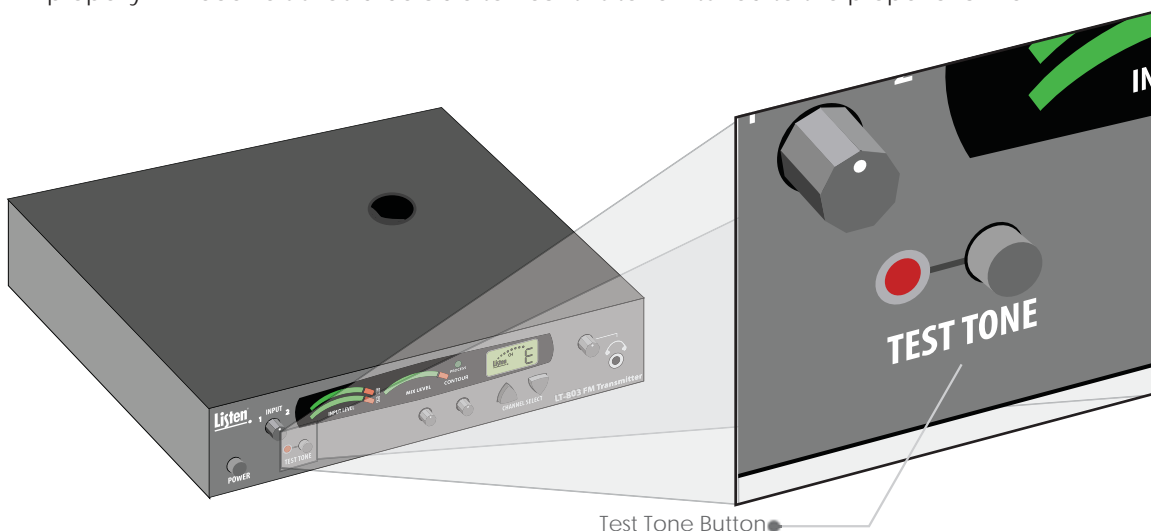
### Monitor Jack

The headphone jack is used to monitor the mix of input 1 & 2. You can adjust the monitor level with the volume knob. The headphone jack is a standard 3.5 mm jack.



### Test Tone

Use the test tone to transmit a 400 Hz tone. This tone will allow the end user to know if the system is transmitting properly. All receivers should be able to hear this tone if tuned to the proper channel.



# Key Concepts in Value Package Setup

## Antenna placement (rear)

### Rear mounted antenna

Rear mounting the LA-123 90° Helical Antenna (72 MHz) will allow the transmitter to be moved if necessary.



## Maximizing Transmission Range

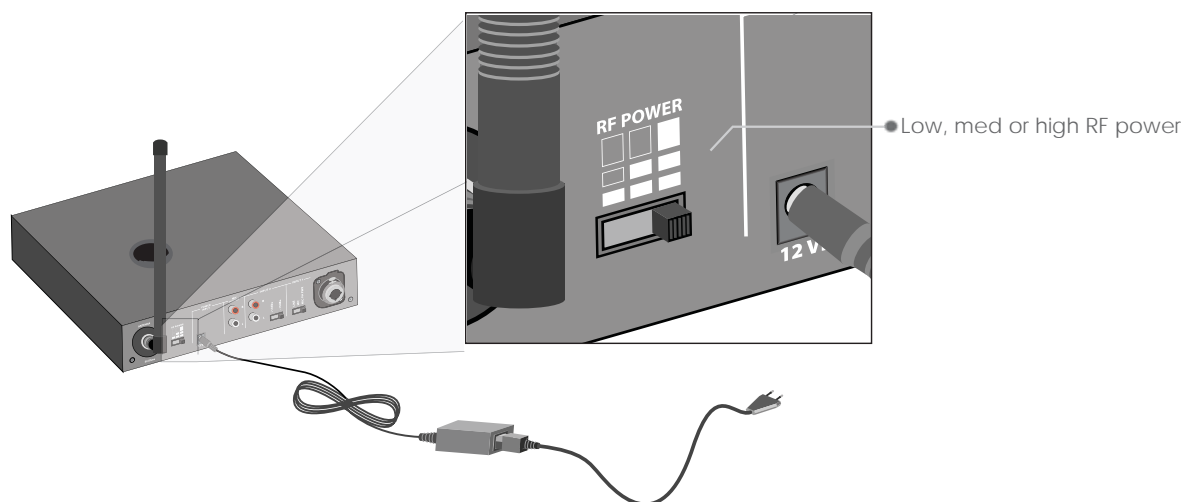
For proper and dependable operation, Listen receivers need to receive a strong and consistent signal from the originating transmitter. The following strategies should be used to maximize this signal:

### Transmitting antenna

When designing and installing your system, keep in mind that the location of both the transmitting and receiving antennas is critical to maximize broadcast range. Minimize the distance and remove any obstructions between the transmitting and receiving antennas. Keep transmitting and receiving antennas (receiver earphone cord) away from metal or conductive objects.

### RF Power switch

Position the RF Power switch on the back of the LT-803-072 to full RF Power, unless lower power is necessary.



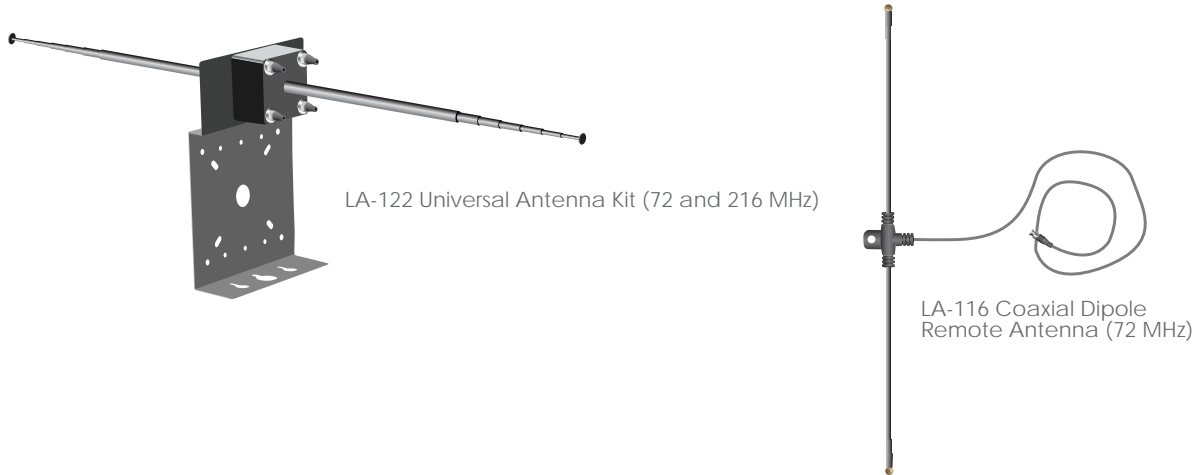


# Alternative Options for Value Package Setup

## Remote antenna

The LA-122 Universal Antenna Kit (72 and 216 MHz) and the LA-116 Coaxial Dipole Remote Antenna (72 MHz) connect to the LT-803-072 and can be placed away from the transmitter for better range. They also allow the unit to be rack mounted with the antenna remotely using the LA-326 Universal Rack Mounting Kit. Both the LA-122 and LA-116 come with 25' of black coaxial cable (RG-58).

**ATTENTION:** Long cable runs can result in signal degradation due to the "loss" characteristics of the cable. Minimize cable runs as much as possible or use "low loss" RG-8 cable.



## Receiver Options

Listen offers a variety of portable and stationary receivers. Each receiver offers different features to help further customize your FM system.

**ATTENTION:** The SQ "Super Quiet" function must be turned OFF for better audio quality when using the LT-803-072 contained in this Value Package.



LR-300-072  
Portable Digital FM Receiver  
(72 MHz)



LR-400-072  
Portable Display FM Receiver  
(72 MHz)



LR-500-072  
Portable Programmable Display FM Receiver  
(72 MHz)



LR-100-072  
Stationary FM Receiver/ Power Amplifier  
(72 MHz)

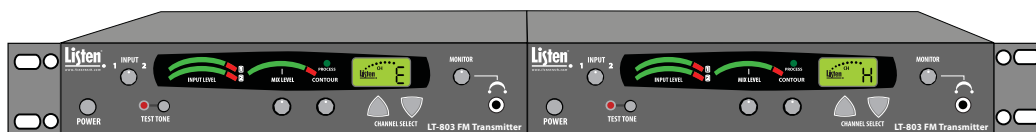


LR-600-072  
Wireless FM Receiver/ Speaker  
(72 MHz)

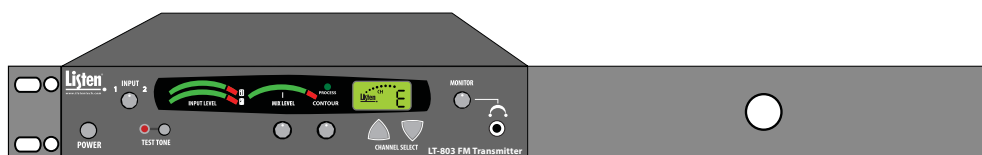
# Key Concepts in Value Package Setup

## Rack Mounting the Transmitter

The LT-803-072 can be rack mounted if necessary. With the use of the Listen LA-326 Universal Rack Mount Kit, you can mount one or two transmitters to the standard 19" rack. The rack mounted unit will take 1 ru of space.



Rack Mount with dual units installed.



Rack Mount with single unit installed.

The antenna can also be in the front of the rack with the use of the LA-125 Antenna Kit for Rack Mount (72 MHz) and the LA-326 Universal Rack Mounting Kit.



Rack Mount with single unit and external antenna installed.

**NOTE:** The antenna may need to be remote mounted using the LA-122 Remote Antenna Kit if the transmitter(s) is rack mounted. If a rack is metal, it is not recommended to have the antenna inside. Also, the depth of the rack and equipment inside could prevent an antenna from being placed inside.

# Notes

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## *Notes*

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LT-803-072 Stationary 3-Channel FM Transmitter

***Don't miss a single sound.***



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## Listen Configurations

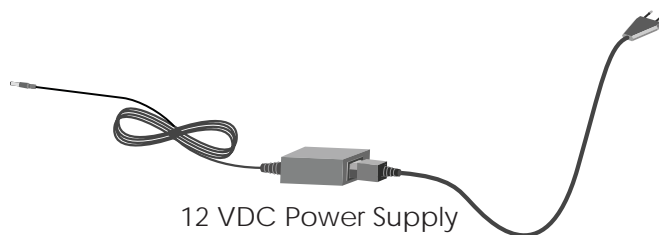
- LT-803-072-01 (North America)
- LT-803-072-02 (Asia/UK)
- LT-803-072-03 (Euro)

## LT-803-072 Package Contents

- (1) LT-803-072 Stationary 3-Channel FM Transmitter
- (1) LA-207 12 VDC Power Supply
- (1) Quick Reference Card



LT-803-072 Stationary 3-Channel FM Transmitter



12 VDC Power Supply



Quick Reference Card





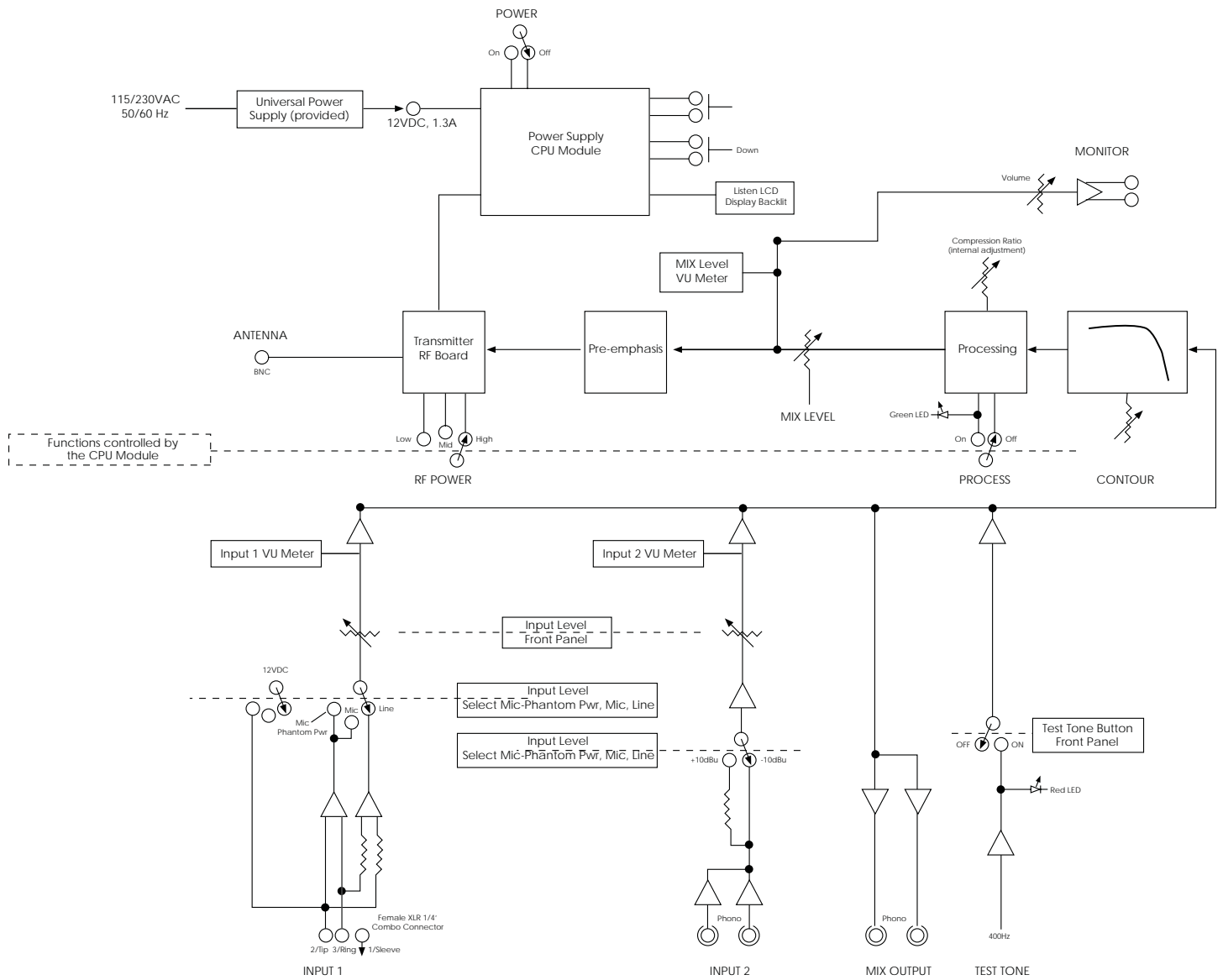
# LT-803-072 Specifications

## Architectural Specification

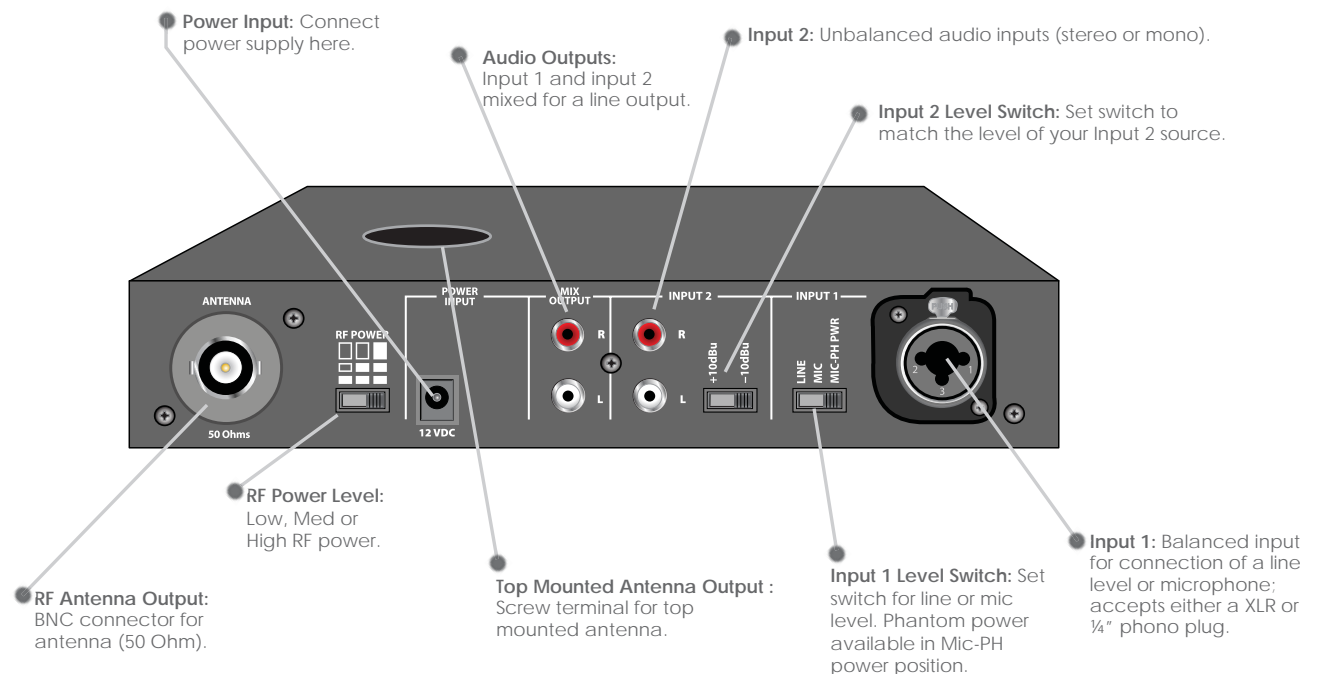
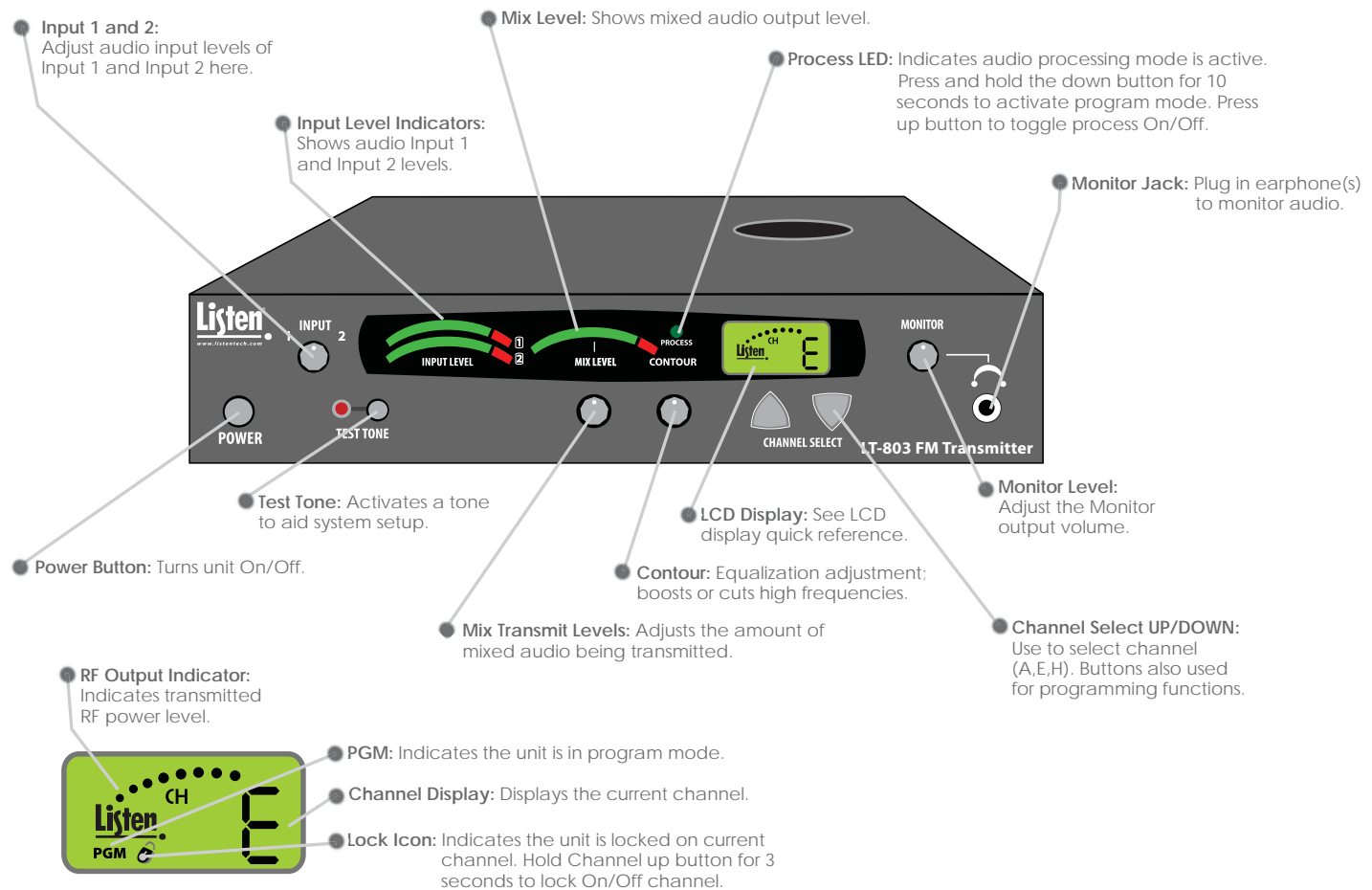
The Stationary FM Transmitter shall be capable of broadcasting on one of any three channels – A (72.100 MHz), E (72.900 MHz) or H (75.900 MHz). The transmitter shall have a SNR of 62 dB or greater. The output power shall be adjustable to quarter, half or full. Channel tuning shall be capable of being locked. The device shall have an audio frequency response of 50 Hz to 15k Hz,  $\pm 3$  dB at 72 MHz. It shall have two (2) mixing audio inputs. The device shall have the following audio controls: input level, mix level and an adjustable low pass filter (contour). The device shall have an audio processor that is capable of automatic gain control and limiting. The Listen LT-803-072 is specified.

Specifications		LT-803-072
RF	RF Frequency Range	(A) 72.100, (E) 72.900, (H) 75.900
	Number of Channels	3 wide band
	Frequency Accuracy	$\pm 0.005\%$ stability 32° to 122°F (0° - 50°C)
	Transmitter Stability	50 PPM
	Transmission Range	Up to 1,500 ft. (457.20 m)
	Output Power	80,000uV at 3 m
	Antenna	Various antennas available
	Antenna Connector	BNC
	Compliance	FCC Part 15, Part 90, Industry Canada
** All system specifications are wireless end-to-end		
Audio	System Frequency Response	50 Hz - 15 kHz ( $\pm 3$ dB)
	System Signal to Noise Ratio	62 dB (A-Weighted)
	System Distortion	<2% total harmonic distortion (THD) at 80% deviation
	Audio Input 1	Rear panel, one (1) Female-XLR and ¼ in. combo connector, balanced, 0/-55 dBu (line/mic) nominal input level adjustable, -30/+21 dBu (line/mic) maximum input level, impedance 20k/1k Ohm (line/mic), phantom power +12 VDC.
	Audio Input 2	Rear panel, two (2) Phono connectors, unbalanced, -10/+10 dBu nominal input level adjustable, +30 dBu maximum, impedance 100k Ohms.
	Audio Processing (Process)	Compression can be turned on/off. Slope internally adjustable from 1:1 to 4:1. Default 2:1
	Contour	Cuts and boosts frequencies above 5 kHz
	Combined Audio Output (Mix)	Input 1 and input 2, mixed output (rear panel), two (2) phono connectors, unbalanced, -10 dBu nominal output level, +15 dBu maximum, impedance 10 ohm.
Controls	Headphone Output (monitor)	Front panel, one (1) 3.5 mm (0.14 in.) stereo connector, unbalanced, adjustable output level, +3 dBu maximum, impedance 10 Ohm.
	Front Panel	Power, Test Tone on/off, Channel UP/DOWN, Input levels, Mix level, Contour, Monitor volume control
	Rear Panel	Input 1 Level (line, mic, mic-phantom power), Input 2 Level (-10/+10 dBu), RF Power level (low, mid, high)
	Internal Adjustments	Compression ratio for audio processor
Indicators	Programming	Process on/off, Channel lock
	Input 1, Input 2, Mix Level VU	Indicates Input 1, Input 2, and Mix audio levels; 10 segment LED's (8 green, 2 red)
	Processing	Indicated by a green LED when on (front panel)
	RF Power	Indicated on the LCD (low, mid, high)
	LCD Display	Channel designation, lock status, RF Power Level, programming (front panel)
Power	Test Tone	Red LED illuminates when test tone is enabled
	Power Supply	In-line power supply. Listen part number LA-207 (line cord is determined by each country's AC power standards)
	Power Supply Input	Input: 100-240 VAC, 50-60 Hz, 0.4 A
	Power Supply Output	Output: 12 VDC, 1.3 A, 15.6 W
	Power Supply Connector	Output Connector: 0.02 in. (5.0 mm) OD, 0.01 in. (2.5 mm) ID, barrel type
Physical	Power Supply Compliance	UL, CE GS, TUV, RoHS
	Dimensions (H x W x D)	8.50 x 1.75 x 9.12 in. (21.6 x 4.45 x 21.16 cm)
	Color	Dark grey with white silk screening
	Unit Weight	2.6 lbs. (1.2 kg)
	Unit Weight with LA-207-01 Power Supply	3.5 lbs. (1.6 kg)
	Shipping Weight	4.5 lbs. (2.0 kg)
Environmental	Rack Mounting	One (1) rack space height, 1/2 rack space wide. One (1) or two (2) transmitters can be mounted in one rack space, optional rack mount (LA-326)
	Temperature - Operation	-10°C (14°F) to +40°C (104°F)
	Temperature - Storage	-20°C (-4°F) to +50°C (122°F)
	Humidity	0 to 95% Relative Humidity, non condensing

# LT-803-072 Block Diagram



# LT-803-072 Quick Reference



# LT-803-072 Setup Instructions

## 1 **Unpack the Product**

Remove outer packaging and plastic cover. Verify all components are present and no physical damage has occurred to the product.

## 2 **Mount LT-803-072(s) in Rack (if desired)**

If rack mounting the transmitter(s), install the optional rack mount kit (LA-326) according to the instructions included with the kit.



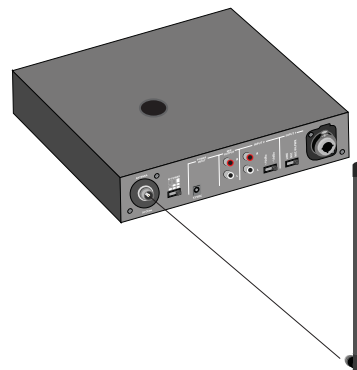
Rack Mount with single unit installed.



Rack Mount with dual units installed.

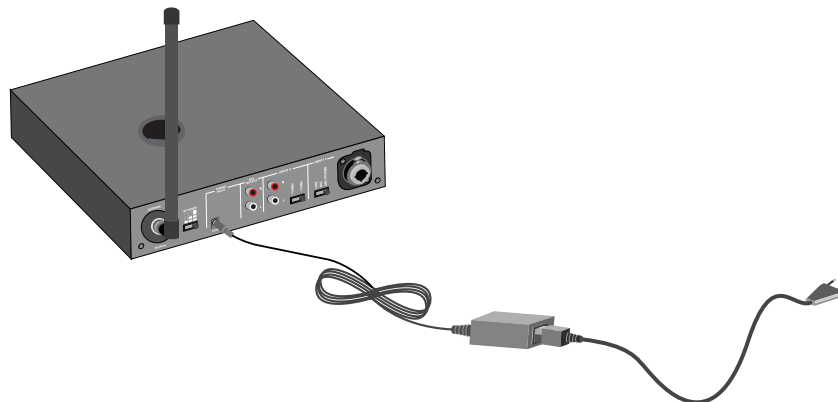
## 3 **Connect Antenna**

Connect antenna to rear of transmitter.



## 4 **Connect Power**

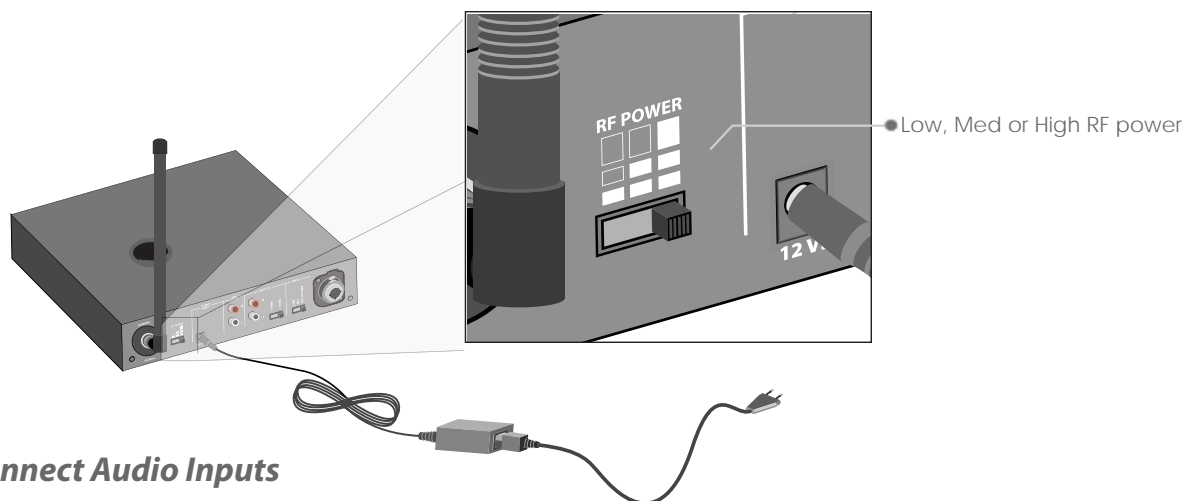
Plug the power supply into the power connector on the back panel. Plug the power supply into an outlet. Only use a Listen approved power supply (12 VDC).



# LT-803-072 Setup Instructions

## 5 Set RF power

Set the RF POWER switch on the back of the unit to High, Medium, or Low (Level is indicated on the LCD display by number of dots above Listen logo). The amount of transmitted RF power that you will need depends on your application. If you are operating multiple transmitters in the same environment, it is best to set the transmitter's output power to its lowest level to reduce the possibility of interference.

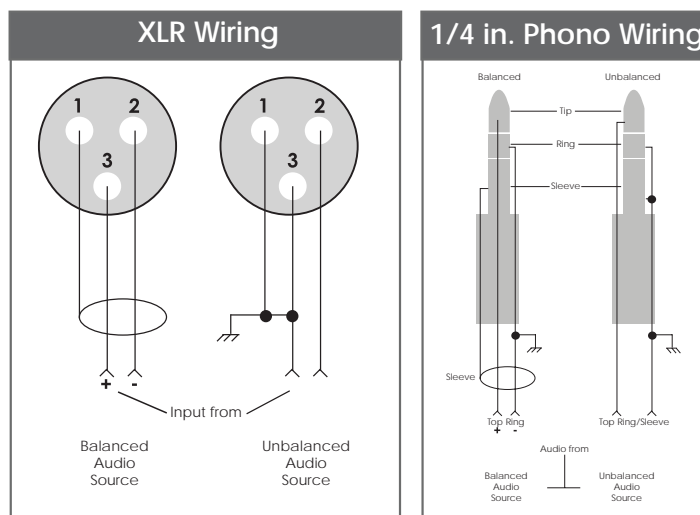


## 6 Connect Audio Inputs

The LT-803-072 has two (2) audio input options: Input 1 and Input 2. Input 1 is a balanced connection using either an XLR or 1/4 in. phono connector. Input 2 has two unbalanced mixing phono connectors. Use Input 1 if you are using a microphone or if you have a balanced connection such as from a professional audio mixer (you can also use Input 1 for unbalanced connections). Use Input 2 to connect to an unbalanced audio source.

### 6A Input 1

Input 1 offers a choice of balanced XLR or 1/4 in. phono connector. Plug an audio source into Input 1: move the input select switch to the type of input source being used. Select "Line" for Line Inputs, "Mic" for dynamic microphones or "Mic + PH Power" for condenser microphones. A balanced feed from a soundboard can also be used with Input 1.

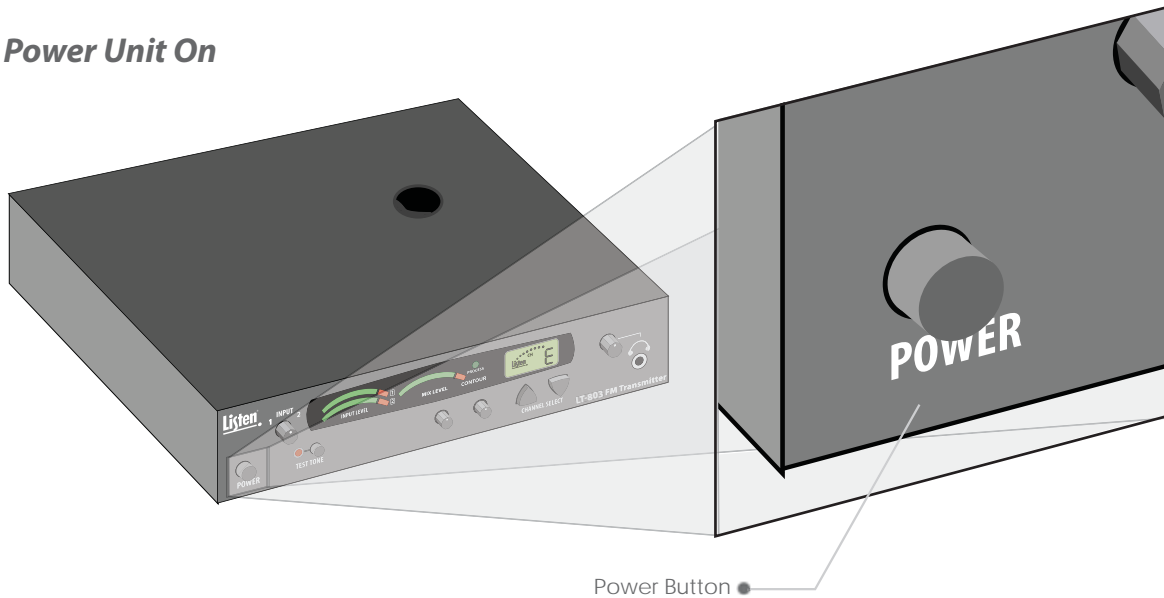


### 6B Input 2

Plug your unbalanced audio source into Input 2 and select the audio level switch for -10 dBu or +10 dBu, to match the audio level coming from your equipment.

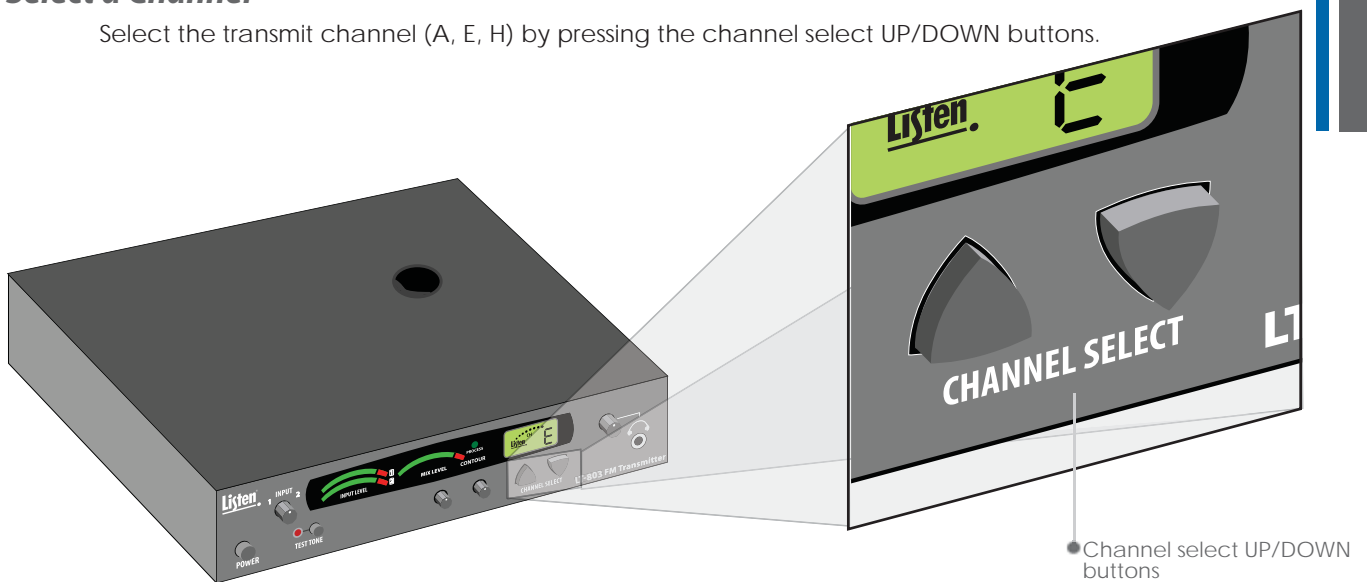
# LT-803-072 Operating Instructions

## 1 Power Unit On



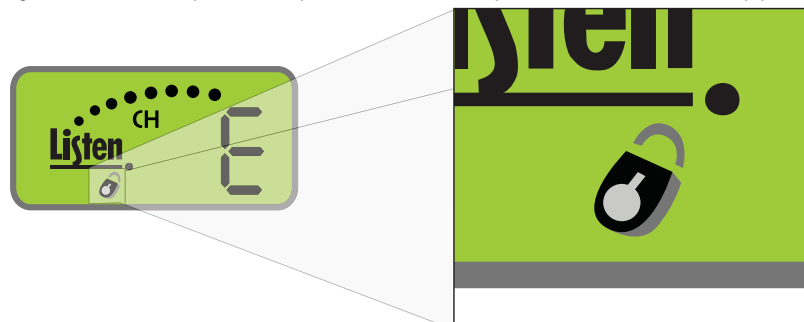
## 2 Select a Channel

Select the transmit channel (A, E, H) by pressing the channel select UP/DOWN buttons.



## 3 Lock on Channel

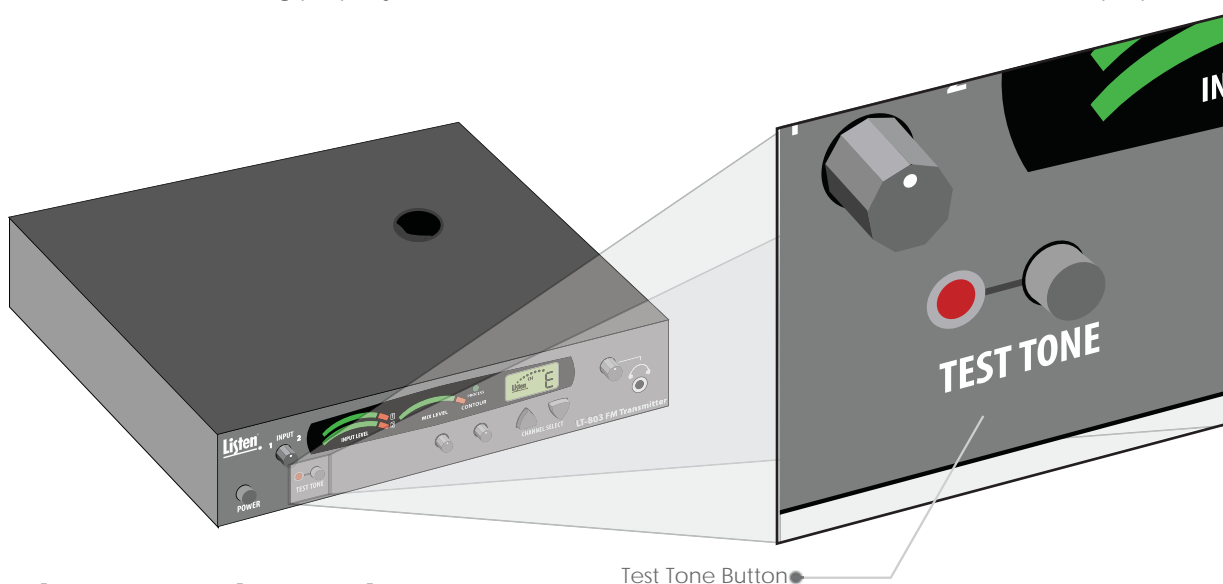
Once you determine your transmit channel, you can lock the transmitter on that channel. To lock a channel hold the Channel Select UP button for 3 seconds until the padlock icon appears on the display. To unlock, repeat this process and the padlock icon will disappear.



# LT-803-072 Operating Instructions

## 4 Test Tone (if necessary)

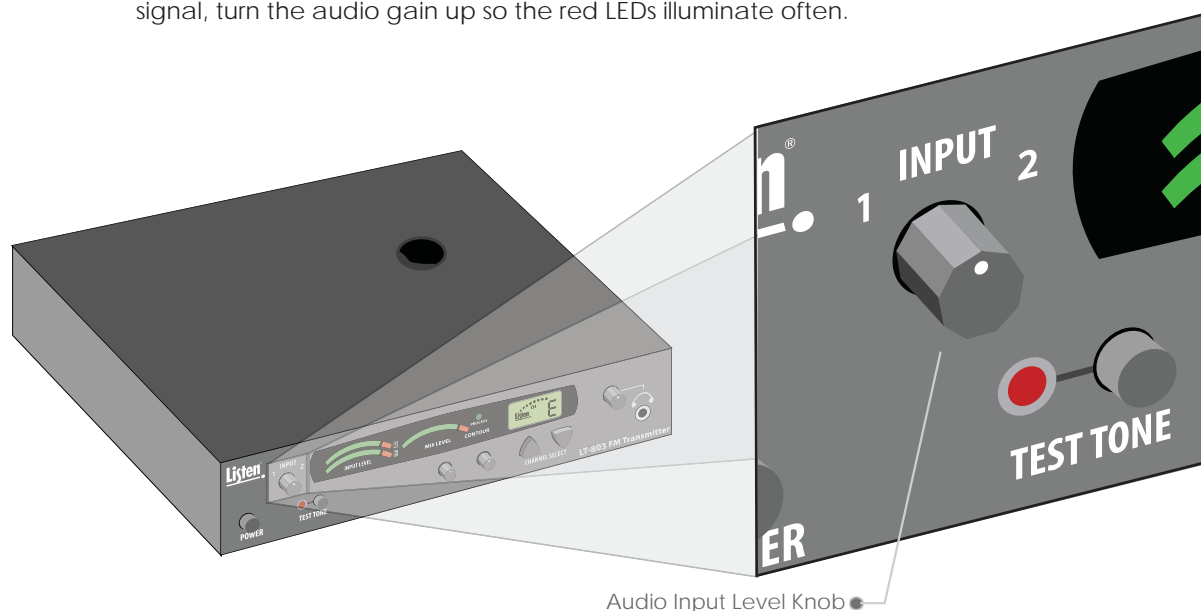
Use the test tone to transmit a 400 Hz tone. This tone will allow the receiver to know if the system is transmitting properly. All receivers should be able to hear this tone if tuned to the proper channel.



## Adjusting Audio Levels

### 1 Adjust Audio Input Level

Turn the input knob counter-clockwise to add gain to Input 1. This will decrease gain to Input 2. Turn input knob clockwise to add gain to Input 2. This will decrease gain to Input 1. If you have two audio sources connected to Input 1 and 2, adjust the level of one input using the VU meter, then adjust the output level of the other audio source. Adjust the input level until the left VU meter(s) occasionally illuminate the red LEDs. Illumination of the red LEDs indicates the unit is in limiting. Limiting is required so that the unit does not over-modulate the transmit signal. If you don't want any audio limiting to occur, make sure the red LEDs never illuminate. If you want a highly limited signal, turn the audio gain up so the red LEDs illuminate often.

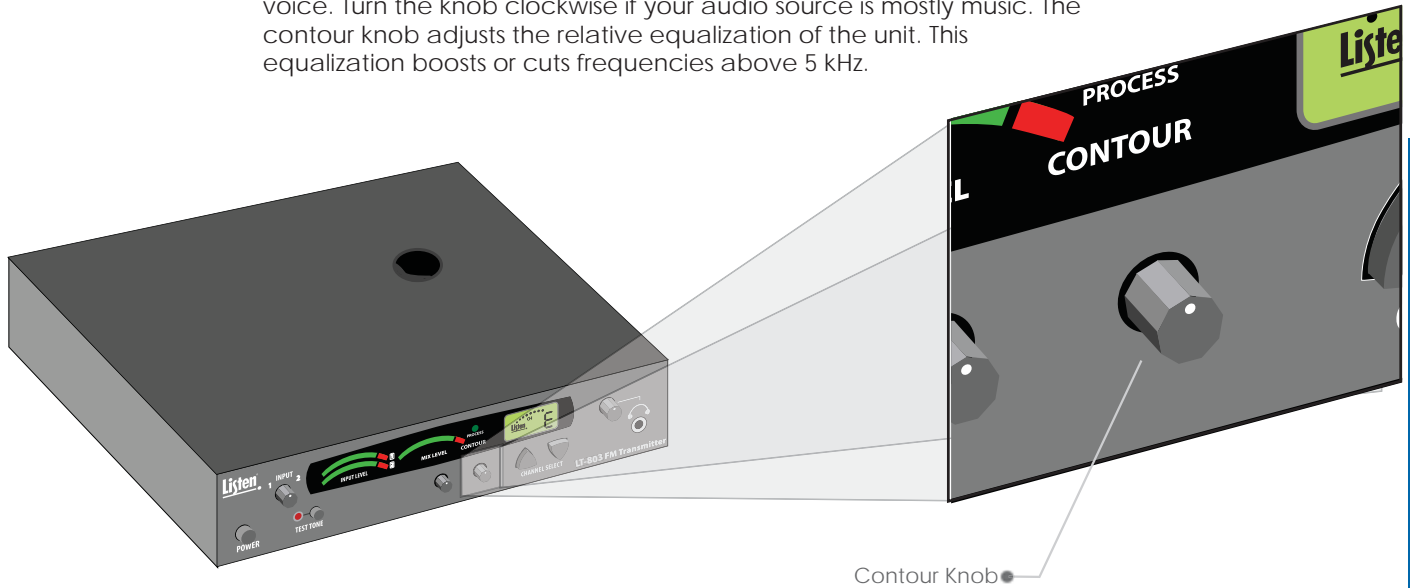




# LT-803-072 Operating Instructions

## 2 Adjusting the Contour knob

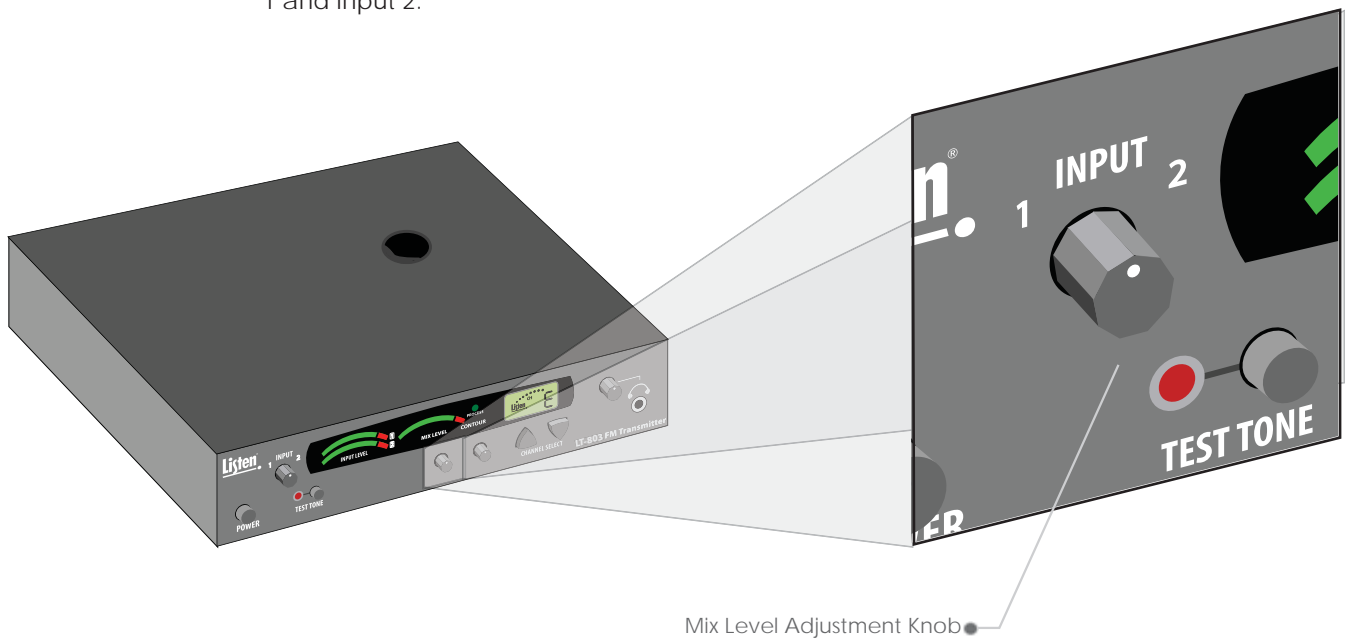
Turn the contour knob counter-clockwise if your audio source is mostly voice. Turn the knob clockwise if your audio source is mostly music. The contour knob adjusts the relative equalization of the unit. This equalization boosts or cuts frequencies above 5 kHz.



LT-803-072

## 3 Adjust Mix Level

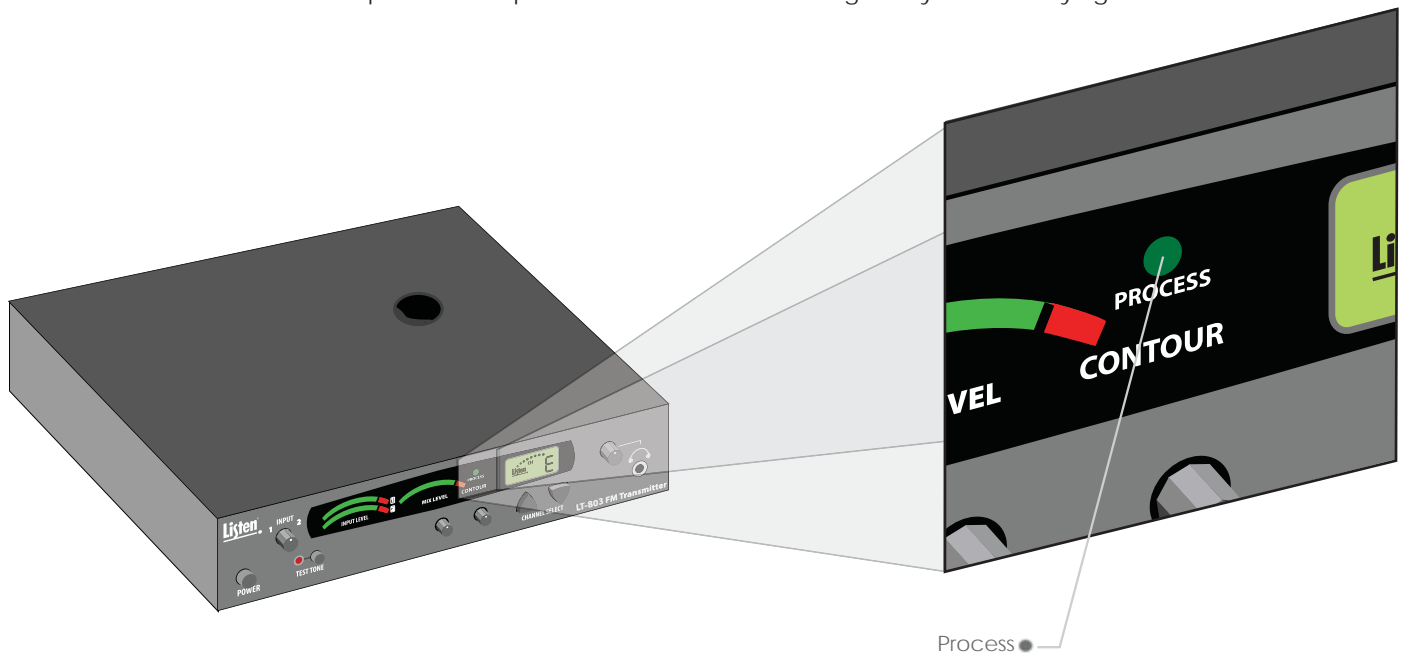
Adjust the mix level until the right VU meter occasionally illuminates the red LED. This is the level adjustment for the combined output from Input 1 and Input 2.



# LT-803-072 Operating Instructions

## 4 Process Mode

Process mode is used for Audio Gain Control (AGC). Press and hold the down button for 10 seconds to activate program mode. Press up button to toggle process On/Off. With the process mode enabled, the LT-803-072 will automatically adjust for inconsistent signal input levels by raising or lowering the signal level accordingly. This feature should be used in applications where a consistent sound level is important and the input levels vary substantially. Typically you would not want to engage the Process Mode when a speaker's emphasis is critical to the message they are conveying.



# Accessories for LT-803-072

## Accessories



LA-123

### Antennas

LA-80 2-Way RF Antenna Combiner  
LA-81 4-Way RF Antenna Combiner  
LA-82 6-Way RF Antenna Combiner  
LA-101 Helical Top Mounted Antenna (72MHz)  
LA-106 Telescoping Top Mounted Antenna (72 MHz)  
LA-116 Coaxial Dipole Remote Antenna (72MHz)  
LA-122 Universal Antenna Kit (72 and 216 MHz)  
LA-123 90° Helical Antenna (72 MHz)  
LA-125 Antenna Kit for Rack Mount (72 MHz)



LA-207

### Power Supply

LA-207-01 12 VDC Replacement Power Supply for LT-803-072 (North America)  
LA-207-02 12 VDC Replacement Power Supply for LT-803-072 (Asia, UK)  
LA-207-03 12 VDC Replacement Power Supply for LT-803-072 (Euro)



LA-127

### Cables/ Connectors

LA-112 RG-58 50 Ohm Coaxial Cable (Per ft.)  
LA-113 RG-8 50 Ohm Low-Loss Coaxial Cable (Per ft.)  
LA-115 RG-58 BNC Coupler  
LA-127 RG-58 BNC Connector  
LA-128 RG-8 BNC Connector  
LA-390 RG-8/50 Ohm Preassembled Coaxial Cable (Per ft.)  
LA-391 RG-58/50 Ohm Preassembled Coaxial Cable (Per ft.)



LA-304

### Miscellaneous

LA-304 Assistive Listening Notification Signage Kit  
LA-326 Universal Rack Mounting Kit

## *Notes*

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LR-200 Standard 3-Channel FM Receiver

***Don't miss a single sound.***



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## Listen Configurations

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- LR-200-072

## LR-200-072 Package Contents

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- (1) LR-200-072 Standard 3-Channel FM Receiver (72 MHz)
- (1) Quick Reference Card



LR-200-072  
Standard 3-Channel  
FM Receiver  
(72 MHz)



Quick Reference Card





# LR-200-072 Specifications

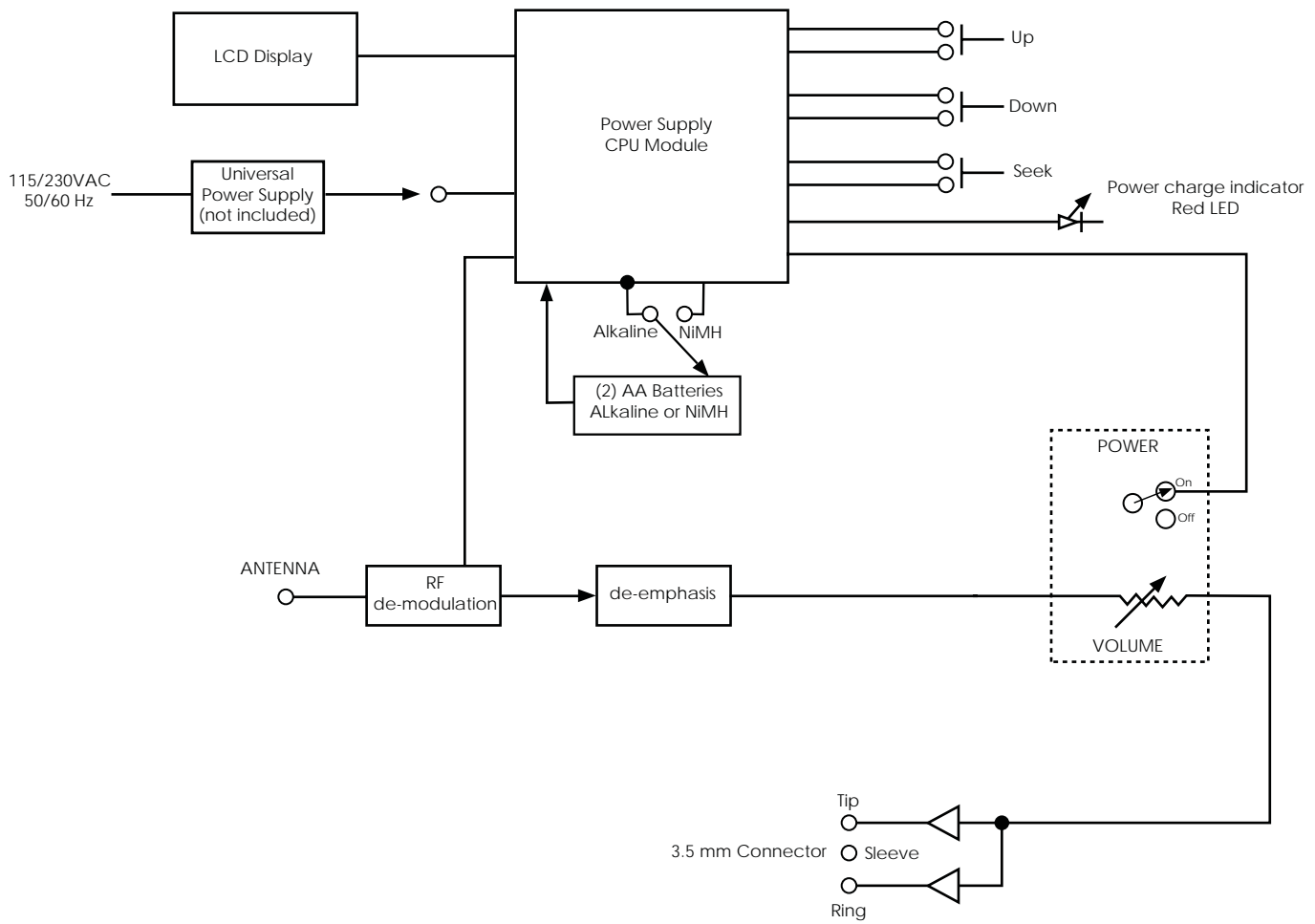
## Architectural Specification

The FM receiver shall be capable of receiving on three wide band channels. The receiver shall have a SNR of 62 dB or greater. The device shall have an audio frequency response of 50 Hz to 15 KHz,  $\pm 3$  dB at 72 MHz. The device shall incorporate a stereo headset jack that allows the user to plug in either a mono or stereo earphone(s). The unit shall operate with (2) AA batteries. The receiver shall incorporate automatic battery charging circuitry for recharging of NiMH batteries. The device shall have a switchable option for the use of (2) alkaline or (2) NiMH batteries. The Listen LR-200-072 is specified.

Specifications		LR-200-072
RF	RF Channel Range	(A) 72.100, (E) 72.900, (H) 75.900
	Number of Channels	3 wide band
	Sensitivity	.6 uV typical, 1 uV maximum for 12 dB sinad
	Frequency Accuracy	+/- .005% stability 32° to 122°F (0° - 50°C)
	Antenna	Uses earphone cable
	Squelch	None
	Compliance	FCC Part 15, Industry Canada, RoHS
** All system specifications are wireless end-to-end		
Audio	System Frequency Response	50Hz - 15kHz (+/-3dB)
	System Signal to Noise Ratio	62 dB
	System Distortion	<2% total harmonic distortion (THD) at 80% deviation
	Output	3.5 mm (0.14 in.) connectors, unbalanced, 0 dBu nominal output level, 16 mW maximum, impedance 32 Ohms
Controls	User Controls	ON/OFF, volume
	Set up Controls (battery compartment)	Alkaline/NiMH batteries, channel switch
	Programming	None
Indicators	LED	Red, illuminated when unit is on or to indicate charging, flashes when batteries are low.
	LCD Display	None
Power	Battery Type	Two (2) AA batteries, alkaline or NiMH
	Battery Life (Listen Batteries)	120 hours alkaline (LA-361), 75 hours NiMH rechargeable (LA-362)
	Battery Charging (NiMH only)	Fully automatic, 10-12 hours under normal use.
	Power Supply	I/P 120VAC; O/P 7.5VDC 250 mA; drop in contact points for use with charging cases. Power supply not included (LA-202)
	Power Supply Connector	2.3 mm OD by 0.7 mm ID, barrel type connector, 7.5 VDC, center positive <250 mA. Drop in contact points for use with Listen charging cases.
	Power Supply Compliance	RoHS, WEEE, UL, PSE, CE, CUL, TUV, CB compliant
Physical	Dimensions H x W x D	4.25 x 2.75 x 1.50 in. (10.8 x 7.0 x 3.8 cm)
	Color	Dark Grey with white silk screening and dark lens
	Unit Weight	3.1 oz. (88 g)
	Unit Weight with batteries	5.2 oz. (147 g)
	Shipping Weight	5.8 oz. (164 g)
	Door	Manually lockable. SEEK behind the door.
Environmental	Temperature - Operation	14° to 104°F (-10° to 40°C)
	Temperature - Storage	-4° to 122°F (-20° to 50°C)
	Humidity	0 to 95% relative humidity, non-condensing

\*\* Specifications are subject to change without notification

# LR-200-072 Block Diagram



## LR-200-072 Quick Reference



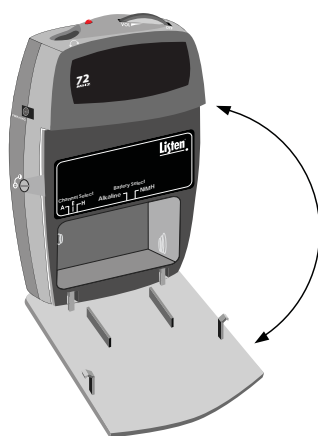
# LR-200-072 Setup Instructions

## 1 Remove the product

Remove outer packaging and plastic cover. Inspect for physical damage. If damage is apparent, please contact the dealer from which the product was purchased or Listen Technologies Corporation technical support for assistance (refer to page 55 for contact information).

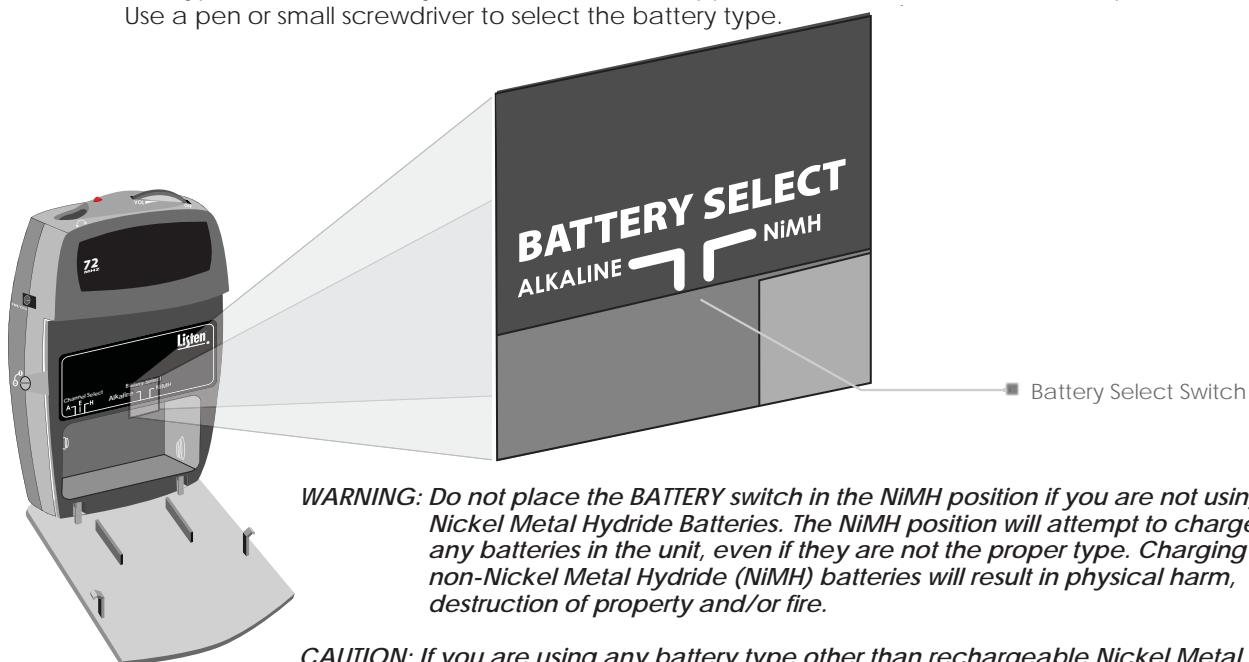
## 2 Open the front access door

If locked, use a small screwdriver to unlock the door locks on both sides of the unit. To unlock the door, rotate the lock ¼ turn counterclockwise. Grip the two tabs with your thumb and index finger and pull the door downward. DO NOT place batteries in the unit at this time.



## 3 Select Battery Type

Two types of batteries may be used: The unit is shipped with the switch in the Alkaline position. Use a pen or small screwdriver to select the battery type.



**WARNING:** Do not place the BATTERY switch in the NiMH position if you are not using Nickel Metal Hydride Batteries. The NiMH position will attempt to charge any batteries in the unit, even if they are not the proper type. Charging non-Nickel Metal Hydride (NiMH) batteries will result in physical harm, destruction of property and/or fire.

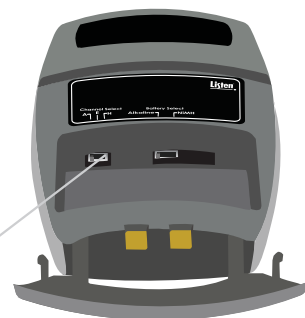
**CAUTION:** If you are using any battery type other than rechargeable Nickel Metal Hydride (NiMH) batteries, make sure the BATTERY selection switch is in the alkaline position.

# LR-200-072 Setup Instructions

## 4 Channel Select

Set channel select switch to desired channel (A, E, H). Make sure that the channel on both receiver and transmitter are the same.

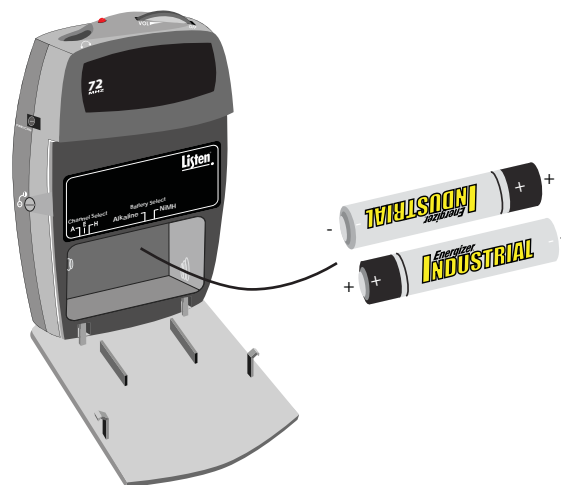
Channel Select Switch ■



## 5 Place Batteries in Unit

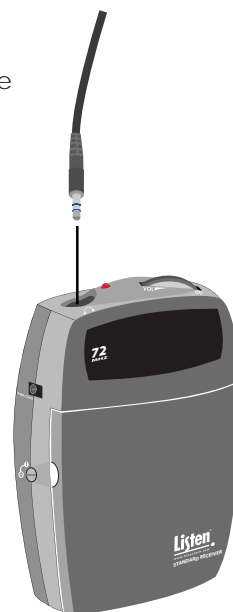
Insert two AA batteries making note of the battery polarity shown in the battery compartment, and again verifying that the BATTERY SELECT switch is in the correct position for the batteries you are using. (Alkaline should be selected for all battery types other than NiMH).

**NOTE:** Listen provides industrial strength AA alkaline batteries (LA-361) and high performance AA Nickel Metal Hydride batteries (LA-362). These may be purchased from your Listen dealer.



## 6 Connect an Earphone or Headset

Your headset or earphone will connect to the jack on the top of the unit. Either mono or stereo connectors may be used with a Listen receiver. Make certain you push the plug all the way into the jack.



# LR-200-072 Setup Instructions

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## ***Turn the Unit On***

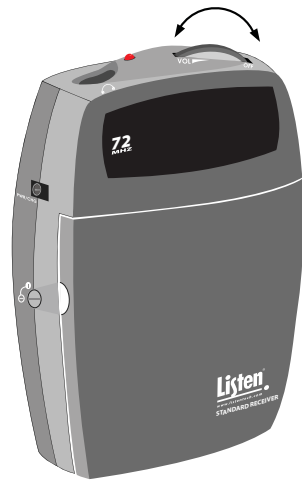
Receivers are turned on by rotating the volume dial counterclockwise. The red LED on top of the unit will illuminate. If it does not, make sure you have installed the batteries correctly and that you are using fully charged batteries.



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## ***Adjust the volume control***

Use the control dial on the top of the unit to adjust the volume to a comfortable level.



# Accessories for LR-200-072

## Accessories



LA-170

### Headphones

LA-161 Single Ear Bud  
LA-162 Stereo Ear Bud  
LA-164 Ear Speaker  
LA-165 Stereo Headphones  
LA-166 Neck Loop  
LA-170 Behind-the-Head Stereo Headphones  
LA-171 Noise Canceling Headphones



LA-202

### Power/Charging Supplies

LA-202 Power/Charging Supply for FM Portable Products



LA-266

### Cables

LA-265 Consumer Camcorder Cable  
LA-266 Professional Camcorder Cable  
LA-275 Sacrificial Cable



LA-321

### Charging/ Carrying Cases with Removable Lid

LA-311-01 16-Unit Portable FM Product Charging/Carrying Case (North America)  
LA-317-01 4-Unit Portable FM Product Charging/Carrying Case (North America)  
LA-321-01 8-Unit Portable FM Product Charging/Carrying Case (North America)  
LA-323-01 4-Unit Portable FM Product Charging/Carrying Case w/Removable Lid (North America)  
LA-324-01 8-Unit Portable FM Product Charging/Carrying Case w/Removable Lid (North America)  
LA-325-01 16-Unit Portable FM Product Charging/Carrying Case w/Removable Lid (North America)



LA-320

### Carrying Cases

LA-306 Soft Case (72 MHz & 216 MHz only)  
LA-313 16-Unit Portable FM Product Carrying Case  
LA-318 4-Unit Portable FM Product Carrying Case  
LA-319 Protective Pouch for Portable FM Products  
LA-320 Configurable Carrying Case  
LA-322 8-Unit Portable FM Product Carrying Case



LA-362

### Miscellaneous

LA-330 Portable Unit Lanyard  
LA-361 High Capacity AA Alkaline Batteries (2)  
LA-362 Rechargeable AA NiMH Batteries (2)











Supplementary Information

***Don't miss a single sound.***



## *Supplementary Information Table of Contents*

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# Battery Charging Information

The LR-200-072 receiver uses a trickle charging method. When one of these receivers is placed into a Listen charging case any NiMH batteries will be charged. The entire charging process takes 10-12 hours under normal conditions.

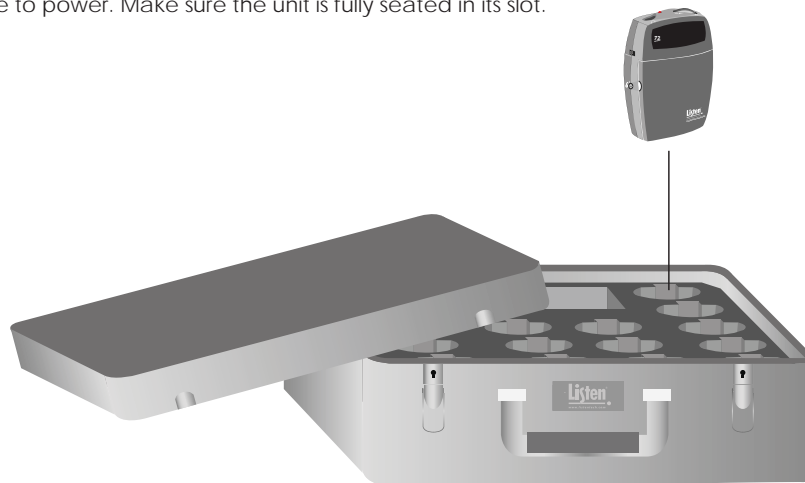
During the charging cycle, the red LED on top of the Listen product will remain illuminated.

When not using the receiver, it is recommended to leave the unit in the charging case or plugged into the LA-202 power source. If the unit is not on the charger, the battery will lose up to 20% of its charge per month.

**NOTE:** Listen provides 2300 mAH (milli-Amp-hour) constant current NiMH Nickel Metal Hydride batteries. These may be purchased from Listen (LA-362).

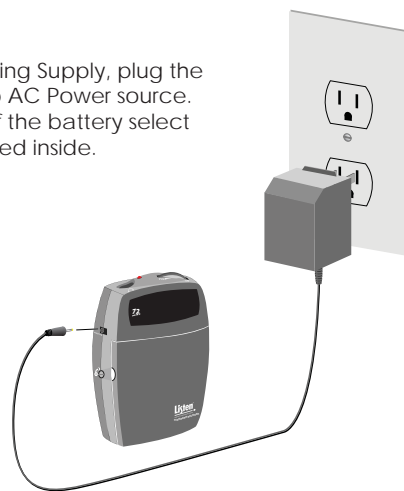
## Charging with a drop-in charger

To charge the batteries using a drop-in charging case, simply place the unit into a slot in the charging case and connect the case to power. Make sure the unit is fully seated in its slot.



## Charging with the LA-202

To charge batteries using the LA-202 7.5 DC Power Charging Supply, plug the transformer into the jack marked PWR/CHG and plug into AC Power source. The unit can operate while batteries are being charged if the battery select switch is in the NiMH position and NiMH batteries are placed inside.



**IMPORTANT:** DO NOT ATTEMPT TO CHARGE ANY TYPE OF BATTERY OTHER THAN NiMH (NICKEL METAL HYDRIDE) with your Listen equipment. Alkaline batteries may explode when connected to a charger. Other risks of charging non-NiMH batteries include destruction of property or fire.

**IMPORTANT:** In order to charge NiMH batteries, the BATTERY SELECT switch in your Listen product must be set to the NiMH setting. Use a pen or small screwdriver to move the switch (located in the battery compartment) to the proper position.

**WARNING:** The case lid MUST be open or removed while the units are charging. The charging process generates heat. Air ventilation is required. It is best to store your charging case at room temperature away from heat sources and direct sunlight



## Frequency Chart

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Channel	Frequency (MHz)
A	72.100
E	72.900
H	75.900

## Troubleshooting

### ***The LT-803-072 has no power.***

Make sure the 12 VDC power transformer is connected to a power source and is connected to the jack marked "Power Input". Make sure the PWR button is pressed in.

### ***There is no audio or the audio level is too low.***

1. Make sure that your audio source is properly connected to Input 1 and/or Input 2. The Input 1 or Input 2 switches must be in the correct position for the appropriate input level. For example: if you are using the output of a mixer on Input 2, the switch should be in the -10 dBu position. If it were to be in the +10 dBu position, the level would be too low. Also, check the Input knob to ensure it is properly adjusted. You should be able to see illuminated lights on the VU meter on Input 1 or Input 2 corresponding with the input level of the audio source. You can listen to the audio source by connecting a headset to the front panel jack and adjusting the Monitor volume control.
2. If the level of audio into the transmitter is low and cannot be corrected using the level input switches, the audio processor can be turned on to boost the signal (see page 28 for description of Process Mode).

### ***The audio is distorted.***

Check to make sure you have the input level select switches in the proper position. You may be providing too much audio level for the input stage to handle.

### ***There is hum in the audio.***

Make sure you have properly grounded the audio source to the LT-803-072. Check the connections from the audio source to the LT-803-072. If you can, try to use a balanced audio source - this will reduce the chance of creating hum. Connect a ground wire from the LT-803-072 to ground and/or to the ground of the source audio.

### ***There is a tone.***

The Test Tone button has been pressed (its LED light is on). Push the Test Tone button to turn off the tone.

### ***The Audio Input 1 sounds "tinny".***

If you are using an unbalanced audio source, make sure Pin 3 on the XLR or the ring on the ¼ in. plug is grounded .

### ***I cannot pick up the signal on the receiver.***

Check to make sure the receiver and the transmitter are on the same channel. Make sure the LT-803-072 has an antenna connected. Ensure that the receiver has an earphone connected.

### ***I can pick up the signal on the receiver, but it sounds like it's not tuned in.***

Check to make sure the transmitter and receiver are on exactly the same channel. It's a good idea to lock the channels once they have been set. To lock the LT-803-072, press the UP button for 3 seconds.

### ***There is not sufficient range.***

First make sure that the receivers you are using are operating properly, then make sure that you have an antenna connected either to the top of the LT-803-072 transmitter or connected to the back of the unit (but not both!). The antenna should be as high as possible and free of obstacles. In addition, make sure you are using the correct antenna type for your unit. You might want to use a remote antenna [LA-122 Universal Antenna Kit (72 MHz) or LA-116 Coaxial Dipole Remote Antenna (72 MHz)] that can be mounted on a mast or wall. Try using different frequencies to find one with less interference. (see page 25 for information regarding channel selection)

## Troubleshooting

***There is interference in my transmission.***

Ensure that the transmitter and receivers are on the same channel. Verify that there are no other transmitters on the same channel or a close channel to the one exhibiting interference. Try different channels until you find a clear channel. Please contact Listen for more ideas on troubleshooting the interference.

***End users are adjusting the unit.***

First, lock the channel on the LT-803-072 by pressing and holding the channel select UP button for 3 seconds. Consider removing the Input, Mix Level and Contour knobs. You can order a rack mount kit (LA-326) from Listen which offers a security cover that will limit access to the unit.

***I am using another manufactures receiver with the LT-803-072.***

Listen's 72 MHz equipment is compatible with any other 72 MHz equipment.

***Several transmitters are operating in the same environment.***

Be sure each transmitter is using a seperate frequency (A,E,H).

***Can I have two antenna's connected to my transmitter.***

No. The LT-803-072 transmitter can use only one antenna connection at a time. You may connect either a top mount antenna through the top antenna port, or a remote antenna connected to the BNC connection on the rear of the unit. If multiple antennas are simultaneously connected to both ports the transmitter will have extremely poor broadcast performance and range.

# Frequently Asked Questions

## Frequently Asked Questions

- Q What is the range of the LT-803-072 transmitter?  
A Line of site up to 1000 ft. (304.8 m).
- Q Does the LT-803-072 include the rack mount?  
A No, but an LA-326 Universal Rack Mounting Kit is available for purchase.
- Q Do I need a transmitter for each audio source?  
A Yes.
- Q Is there a limit to the number of transmitters I can use in one room?  
A Yes, a maximum of 3.
- Q How many receivers can I have on a system?  
A As many as you want. The transmitter simply transmits a signal and you can have as many receivers pick that signal up as necessary. It's like a radio station transmitting and the receivers are the radios tuning into the "channel".
- Q What is the warranty of Listen transmitters?  
A Limited lifetime warranty. The following cases will void the warranty:  
• Misuse, dropping, or any other noticeable cosmetic damage.
- Q What are the differences between the LR-200 and other Listen receivers?  
A The LR-200 offers three (3) frequencies and can be changed inside the door of the receiver via a switch. The LR-200 does not have an LCD screen, the ability to SEEK for open frequencies, SQ (Super Quiet) or programmability. Also, the Signal to Noise is 62 dB compared to 80 dB on Listen's other receivers.
- Q Can the LR-200 be used with the LT-800-072?  
A Yes. The SQ function on the transmitter must be turned off and the transmitter can only be used with one of the three optional frequencies (A, E, H).
- Q Can the LR-200 be used with the LT-700-072?  
A No.
- Q What is the battery life of the LR-200-072?  
A 120 hours alkaline. 75 hours NiMH.
- Q What is the charge time of the LR-200-072 using two (2) NiMH batteries?  
A 10-12 hours under normal use.
- Q What is the warranty of Listen receivers?  
A Limited lifetime warranty. The following cases will void the warranty:  
• Misuse, dropping, or any other noticeable cosmetic damage.  
• Charging alkaline batteries instead of NiMH.  
• Overheating the charging process by closing the lid on the charging case.

# Compliance Notice and FCC Statement

## Compliance Notice

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) These devices may not cause harmful interference, and (2) these devices must accept any interference received, including interference that may cause undesirable operation.

### **Listen's LT-800 Transmitter (216 MHz only)**

Listen's LT-800 transmitter is authorized by rule under the Low Power Radio Service (47 C.F.R. Part 95) and must not cause harmful interference to TV reception or United States Navy SPASUR installations. You do not need an FCC license to operate these transmitters. These transmitters may only be used to provide: auditory assistance to persons with disabilities, persons who require language translation, or persons in educational settings; health care services to the ill; law enforcement tracking services under agreement with a law enforcement agency; or automated maritime telecommunications system (AMTS) network control communications. Two-way voice communications and all other types of uses not mentioned above are expressly prohibited.

This device must be installed by a trained audio professional or certified dealer of Listen. The user can't make any modifications to the unit without expressed written consent of Listen Technologies Corporation. Any modifications made will void the FCC compliance, Listen warranty and the users authority to operate Listen's equipment.

## FCC Statement

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment has been certified to comply with the limits for a class B computing device, pursuant to FCC and IC Rules. In order to maintain compliance with FCC and IC regulations, shielded cables must be used with this equipment. Operation with non-approved equipment or unshielded cables is likely to result in interference to radio and TV reception. The user is cautioned that changes and modifications made to the equipment without the approval of manufacturer could void the user's authority to operate this equipment.

# Warranty and Contact Information

## Warranty

Listen Technologies Corporation (Listen) warrants its transmitters and receivers (models LT-700, LT-800, LT-803, LR-42, LR-44, LR-100, LR-200, LR-300, LR-400, LR-500 and LR-600) to be free from defects in workmanship and material under normal use and conditions for the useful lifetime of the product from date of purchase.

Listen warrants its Stationary IR Radiators (LA-140) to be free from defects in workmanship and material under normal use and conditions for three years from the date of purchase.

Listen warrants its Noise Canceling Microphone (LA-270) to be free from defects in workmanship and material under normal use and conditions for one year from date of purchase.

Listen warrants its Charging/Carrying Cases (LA-311, LA-313, LA-317, LA-318, LA-320, LA-321, LA-322, LA-323, LA-324, LA-325) to be free from defects in workmanship and material under normal use and conditions for one year from date of purchase.

All other products and accessories are warranted for 90 days from date of purchase.

This warranty is only available to the original end purchaser of the product and cannot be transferred. Warranty is only valid if warranty card has been returned, or online warranty registration, has been completed within 90 days of purchase. This warranty is void if damage occurred because of misuse or if the product has been repaired or modified by anyone other than a factory authorized service technician. Warranty does not cover normal wear and tear on the product or any other physical damage unless the damage was the result of a manufacturing defect. Warranty does not include inbound freight costs. Listen is not liable for consequential damages due to any failure of equipment to perform as intended. Listen shall bear no responsibility or obligation with respect to the manner of use of any equipment sold by it. Listen specifically disclaims and negates any warranty of merchantability or fitness of use of such equipment including, without limitation, any warranty that the use of such equipment for any purpose will comply with applicable laws and regulations. The terms of the warranty are governed by the laws of the state of Utah.

In the first ninety days after purchase, any defective product will be replaced with a new unit. After 90 days, Listen will, at its own discretion either repair or replace transmitters and receivers with a new unit or a unit of similar type and condition. Product that is not covered under warranty shall be repaired or replaced with a unit of similar type and condition based on a flat fee.

This limited warranty, prices and the specifications of products are subject to change without notice.

## Contacting Listen

If technical service is needed, please contact Listen. Pre-authorization is required before returning Listen products. If products were damaged in shipment, please contact the carrier, then contact Listen for replacement or repair requirements payable by the carrier.

All Listen European markets are supported through the Listen Technologies GmbH office located in Oberasbach, Germany. For more information on Listen solutions, contact Listen Technologies at +1.801.233.8992, +1.800.330.0891 North America, Listen Technologies GmbH at +49 911 955159-0 or visit [www.listentech.com](http://www.listentech.com). For Europe, Middle East, Africa and India office visit [www.listentech.de](http://www.listentech.de).

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